February 1, 2012

REMEDIAL ACTION WORK PLAN

Busy Bee Cleaners
1818 Merrick Road
Merrick, New York
NYSDEC VCP #V00376-1

Prepared for:

BUSY BEE CLEANERS
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Merrick, New York 11566

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A. Community Air Monitoring Plan (CAMP)
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CERTIFICATION

I, Glenn Netuschil, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Glenn Netuschil, P.E.	February 1, 2012	Signature
NYS Professional Engineer #074741	Date	

1.0 INTRODUCTION

On behalf of Busy Bee Cleaners ("Busy Bee"), Remedial Engineering, P.C. ("Remedial Engineering"), has prepared this Remedial Action Work Plan ("RAWP") for the Busy Bee facility at 1818 Merrick Road, Merrick, New York (the "Site", Figure 1). This RAWP was prepared in accordance with the provisions of the Voluntary Cleanup Agreement (Number V00376-1) dated March 14, 2001 between the New York State Department of Environmental Conservation ("NYSDEC") and Busy Bee to summarize the proposed on-site remedial action.

This RAWP has been prepared in accordance with the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation ("DER-10", May 2010) to address groundwater contamination identified during Site investigations as summarized in a May 12, 2010 letter to NYSDEC from Roux Associates, Inc. ("Roux Associates") and an October 9, 2006 Revised Remedial Investigation Report ("RRIR", Roux Associates, 2006).

1.1 Purpose and Objectives

The purpose of this RAWP is to incorporate the information gathered during the Site investigations, and develop a proposed remedial action to address the on-site groundwater impacts. The RAWP is designed to meet the following objectives:

- provide a brief summary of the Site, including the previous investigations performed to date;
- development of site-specific cleanup objectives based upon the information from the Site investigations;
- discussion of the proposed remedy for the Site;
- provide an engineering evaluation of proposed remedy as per 6 NYCRR-375-1.10C; and
- outline the implementation of the proposed remedy at the Site, including a schedule.

1.2 Site Location and Description

The Site is located at 1818 Merrick Road, Merrick, New York (Figure 1). Additionally, the Site is located in Nassau County, Town of Hempstead, Section 62, Block 1, Lots 177 and 178 at latitude 40° 39' 12.39" north and longitude 73° 33' 20.64" west. The property is approximately 100 feet by 130 feet in size (0.3 acres) with one 3,600 square foot, single-story building located in the central portion of the property. The building is currently occupied by Busy Bee Cleaners, a

commercial dry cleaning operation. To the north of the building is an asphalt paved parking area that wraps around the east side of the building just enough to allow a vehicle to access the rear of the building. A gravel covered parking area is in the rear (south) of the building.

The Site is located on the south side of Merrick Road, which is a heavily congested four-lane commercial corridor running east and west through the southern portion of Nassau County. Residential properties are located to the north and south of Merrick Road. Additional commercial corridors, highways, and railroad tracks run parallel and to the North of Merrick Road. Merrick Bay is located further south of the Site. An aerial photograph of the Site and adjacent properties is presented as Figure 2.

1.3 Site History

Several owners have operated Busy Bee Cleaners at the Site for over 40 years – providing commercial laundry and dry cleaning services. The current building was constructed in 1967 and Busy Bee took control later that year. The facility is connected to a municipal sewer for septic service. There are three floor drains located within the building that discharge washing machine wastewater or other wastewater to the municipal sewer (NCDH, 1993b; USEPA, 1998). There are two former cesspools and two active drywells located in the front of the building. These structures were investigated in August 1993 (Anson, 1993).

A Nassau County Department of Health ("NCDH") Dry Cleaner Inspection Report (NCDH, 1992b) indicates a satisfactory inspection with purchase and removal receipts maintained for a minimum of three years. Waste from a reclaimer was stored inside the building in drums for removal by Safety-Kleen Corp. Currently, Busy Bee operates fourth generation tetrachloroethene ("PCE") dry cleaning machines. Spent solvent is currently captured from the closed-loop system, stored in containers within the building, and collected by Safety-Kleen Corp. for proper disposal. According to the current owner Mr. Robert Bernstein, historical practices included temporary storage of spent solvents for proper transportation and disposal in containers within the building or in containers located outside the building immediately adjacent to the rear door. The transportation company would often transfer spent solvents from Busy Bee containers into their own larger containers. There are no exact records indicating the timeframe when outside storage took place. In addition, a February 23, 1993 NCDH Memorandum To File (NCDH, 1993d) states

that the NCDH notified Busy Bee in 1979 to stop discharge of separator water from a carbon adsorber (sniffer) to the ground behind the building. According to Mr. Bernstein, Busy Bee immediately followed the NCDH request and ceased this common industry practice. It appears that through a combination of poor housekeeping and the common industry practices described above, PCE was discharged to a limited area of onsite soil behind the building over time.

1.4 Previous Environmental Investigations

The following narrative describes the environmental history of the Site. Some information is based on documents obtained by Roux Associates from Busy Bee, the NYSDEC, and the NCDH. In July of 1992, the NCDH sampled an irrigation well supplying a residence located at 2592 Montauk Avenue, Merrick (NCDH, 1992a). The analytical results of this sample detected several purgeable organics including PCE at a concentration of 30 parts per billion ("ppb"). In February 1993, the NYSDEC again requested the NCDH sample the 2592 Montauk Avenue residence (NCDH, 1993e) and a search was conducted in the area for potential sources. This search located two dry cleaners within ½ mile of the residence, Busy Bee located approximately 300 feet to the northwest and the Village Valet Cleaners located at 1988 Merrick Road, Merrick (NCDH, 1993d).

The NCDH inspected the Site and identified five areas of concern: a concrete floor pit receiving washing machine waste water, a soil clogged floor drain in the boiler room, two filled cesspools in the front parking lot, two boiler blow-off pipes exiting the rear of the building, and an unpaved parking lot behind the building. The concrete floor pit receiving washing machine waste water was connected to the municipal sewer. The soil clogged floor drain in the boiler room was determined to be connected to the municipal sewer (USEPA, 1998). The two filled cesspools were addressed at a later date, and the NCDH collected three soil samples on March 26, 1993 from the unpaved parking lot and underneath one of the boiler blow-off pipes (NCDH, 1993b). Analytical results indicated PCE in on-Site soil at concentrations ranging from 510 to 3,300 ppb. Based on these analytical results, the NCDH notified Busy Bee that they were required to submit a Remedial Investigation Work Plan (NCDH, 1993f). In May 1993, as a follow-up to the March 1993 Site sampling, NCDH collected a groundwater sample from an irrigation well located at 1835 Alice Street, approximately 200 feet southeast of the Site (NCDH, 1993c). Analytical results of this sample indicated only 1,1-dichloroethane ("DCA") at a concentration of 2 ppb.

On behalf of Busy Bee, Anson Environmental Ltd. ("Anson") conducted a Remedial Investigation in August 1993 (Anson, 1993). The investigation consisted of fourteen soil borings, photoionization detector ("PID") headspace measurements, soil samples, cesspool sludge samples, and drywell liquid samples (Figure 3). NCDH oversaw the investigation and collected split samples of all soil and sludge samples (NCDH, 1993a). Soil borings were advanced from land surface to one to three feet below land surface. PID headspace measurements were less than 2.0 parts per million ("ppm") in 10 of the 14 soil borings. Soil samples were collected from soil borings with elevated PID readings, which ranged from 10 ppm to 165 ppm.

The Anson Site Investigation Report indicated that there were no volatile organic compounds ("VOCs") detected in two drywell liquid samples and there were low-level detections of benzene, toluene, ethylbenzene, and xylene ("BTEX") compounds, PCE, and trichloroethene ("TCE") in two cesspool sludge samples. All detections of VOCs in cesspool sludge were well below NYSDEC standards. PCE was detected in all four soil samples at concentrations ranging from 100 micrograms per kilogram ("µg/kg") to 2,500,000 µg/kg and exceeded NYSDEC Recommended Soil Cleanup Objectives ("RSCOs") in two of the four samples.

To address the soil contamination identified in the Remedial Investigation, Anson installed a soil vapor extraction ("SVE") system at the Site in August 1994 (Anson, 1996). The system utilized two-inch diameter PVC piping placed horizontally at a depth of approximately 2.5 to 3.0 feet below ground surface in the limited source area identified during a previous investigation. The entire area was covered with two layers of six-mil plastic sheeting and gravel (NCDH, 1997). In addition, Anson indicates that in March 1994 three piezometers were installed at the Site. Groundwater from these piezometers was not sampled at the time of their installation. The SVE system was operated from August 1994 through April 1996. In June 1996, Anson reports that monthly air samples collected during operation of the SVE system decreased to non-detect levels in April 1996 (Anson, 1996). Four soil samples and one groundwater sample were collected at that time to evaluate the effectiveness of the SVE system. Laboratory analytical results of these soil samples indicated PCE concentrations ranging from 0.7 ppb to 210 ppb.

In September 1996, Anson requested no further action at the Site based on the April 1996 results. However, NCDH contended that Anson had been working without regulatory oversight and

required additional soil and groundwater sampling (NCDH, 1996). Four soil samples and one groundwater sample were collected by the NCDH and Anson in September 1997 (NCDH, 1997; Anson, 1997). Laboratory analytical results indicate PCE detected in soil at concentrations ranging from 5 µg/kg to 260,000 µg/kg. In addition, 1,2-DCE and PCE were detected in groundwater at concentrations that exceeded NYSDEC Ambient Water Quality Standards and Guidance Values ("AWQSGV").

In June of 1998, Anson proposed an *in situ* oxidative treatment and an upgrade to the SVE system that would increase the extent of the SVE influence, incorporate an air sparging ("AS") well, and improve the SVE effectiveness by paving the area. The NCDH rejected the proposal indicating that remediation oversight had been referred to the NYSDEC. In October 1998, the NYSDEC notified Busy Bee of their intent to designate the Site as a potential inactive hazardous waste disposal site (NYSDEC, 1998). In November 1998, Anson prepared a Focused Remedial Investigation Work Plan that was reviewed by the NYSDEC and NCDH (Anson, 1998). However, the November 1998 Work Plan was apparently never implemented.

On March 14, 2001, Busy Bee and the NYSDEC entered into a Voluntary Cleanup Agreement to implement a Remedial Response Program for the Site. A second Remedial Investigation Work Plan was prepared by Berninger Environmental, Inc. ("Berninger") in April 2001. Comments on the April 2001 Work Plan were provided to Berninger by the NYSDEC in October 2001. Roux Associates prepared the October 7, 20003 RI Work Plan rather than respond to the comments on the Berninger Work Plan.

In December 2003, three temporary groundwater-sampling locations, 11 soil borings, and two surficial soil sampling locations were advanced at the Site. In addition, three soil vapor screening locations were advanced. All sampling locations and analytical results were presented in Roux Associates' October 9, 2006 Revised Remedial Investigation Report (Roux Associates, 2006)

Seven additional temporary groundwater sampling locations were advanced between August 2004 and May 2005 at the Site as well as along Alice and Bernard Streets south of the Site (Roux Associates, 2006). In 2009 five monitoring wells were installed as part of a pre-design groundwater sampling program. Two clusters of one shallow monitoring well and one deep

monitoring well were installed. One cluster was installed onsite and one cluster was installed on Alice Street (Figure 3). A single monitoring well was installed on Bernard Street further to the south. These monitoring wells were sampled in December 2009 and analytical results reported to the NYSDEC in a May 12, 2010 letter.

In 2004, following a NYSDEC request, four soil vapor samples were collected, one offsite to the west at 1812 Merrick Road, and three offsite to the south in the backyards of residential homes at 22 Alice Street, 26 Alice Street, and 1807 Alice Street. Additional crawlspace and indoor air samples at the three Alice Street homes were collected in February 2005. Three additional soil vapor samples, a sub slab soil vapor sample, and a first floor indoor air sample to be collected at the 1812 Merrick Road property in May 2006. No PCE was detected above ambient air conditions in any of the homes along Alice Street (Roux Associates, 2006).

A detection of PCE in the initial soil vapor sampled collected in the rear parking lot of 1812 Merrick Road resulted in the advancement of nine soil vapor screening locations at 1812 Merrick Road; collection of three additional indoor air samples at 1812 Merrick Road, one from each floor; and collection of a confirmatory sub-slab soil vapor sample at 1812 Merrick Road between March 2008 and November 2008. In addition, air samples were collected from the crawlspace of 1825 Alice Street, from the far east side of the Site, and from 1810 Merrick Road to the west of the Site. All analytical results were presented in the 2006 Revised Remedial Investigation Report and an April 29, 2009 letter to NYSDEC (Roux Associates, 2009).

2.0 RESULTS OF SITE INVESTIGATION

The study area encompasses the Site, the two streets south of the Site, and one street to the west and east of the Site. The study area boundaries include Merrick Road to the north, Bernard Street to the south, Beach Drive to the west and Montauk Avenue to the east (Figure 2).

2.1 Topography

The Site topography is relatively flat with an approximate elevation of eight feet above mean sea level. Surface water along the north and east sides of the property is directed towards two onsite drywells north of the building. Surface water along the south side of the property infiltrates through the gravel parking area.

In general, regional topography slopes gently to the south. Surface water bodies include Cammanns Pond approximately 1,000 feet to the east, Simmond Creek approximately 2,000 feet to the southeast, Mud Creek approximately 2,000 feet to the southwest, and Merrick Bay and East Bay approximately 3,000 feet to the south.

2.2 Water Supply

Potable water in Merrick is supplied by the New York Water Service Corporation. A search of the NYSDEC public water supply well maps by Berninger Environmental, Inc. (Berninger) in 2001 identified seven supply wells within a one-mile radius of the Site. All seven supply wells are located hydraulically upgradient of the Site. An additional search of the Long Island Well Permit database by Berninger in 2001 did not identify any commercial or industrial supply wells with a capacity greater than 40 gallons per minute within a one-mile radius of the Site.

2.3 Hydrogeologic Setting

Unconsolidated glacial outwash deposits consisting mainly of sand and gravel underlie the region. Regionally, these shallow glacial deposits range in thickness from 50 to 80 feet and are underlain by the “20-foot” Clay formation, a marine deposit that is approximately 20 feet thick in Merrick. Regional groundwater flow is to the south (Perlmutter, 1963).

2.4 Site Specific Hydrogeology

The geology of the Site consists of sand with minor amounts of fines from grade down to 47 feet. A clay-confining unit was identified at approximately 47 feet bls. Groundwater flow direction based on water-level measurements on September 2, 2004 (with six installed temporary piezometer locations) and on June 3, 2005 and June 15, 2005 (with nine installed temporary piezometer locations) is in a south to southeastern direction. A groundwater flow map is shown as Figure 4. Water levels measured with pressure transducers installed in piezometers PZ-102 and PZ-106 show that there are no tidal influence or bank storage effects at the Site.

2.5 Soil Quality

Previous investigations have identified soil underlying portions of the Site as a media of concern based upon VOC concentrations. Although operation of a soil vapor extraction (SVE) system appears to have significantly reduced PCE concentrations at the Site, residual PCE contamination was detected in one post-SVE system operation soil sample collected in 1996 at a concentration above the NYSDEC RSCO for PCE (Anson, 1996). The soil samples collected as part of Roux Associates' remedial investigation attempted to confirm the 1996 analytical results, delineate soil contamination horizontally and vertically, and determine if any separate-phase PCE was retained in the subsurface. Analytical results showed no VOCs detected in soil above NYSDEC RSCOs. This suggests that the PCE detected in 1996 has degraded, or was very limited in extent, and that there is no separate-phase PCE in the subsurface. Surficial soil sample results show that there no direct contact exposure from surface soils.

2.6 Groundwater Quality Results

During the RI and 2009 pre-design groundwater sampling, a total of 45 groundwater samples were collected from up to 4 depths at 15 locations during multiple mobilizations. The initial groundwater-sampling event collected groundwater from four depths at two sampling locations at the southern property line of the Site and one immediately to the west. Analytical results from samples collected during the first mobilization identified VOCs, primarily PCE and its degradation products TCE, and 1,2-DCE, at concentrations above NYSDEC AWQS in every sample collected. The greatest concentrations of VOCs detected in the initial mobilization were PCE, TCE, and 1,2-DCE at concentrations of 9,700 µg/L, 1,700 µg/L, and 700 µg/L, respectively from the 6 to 8 foot interval below land surface.

A second groundwater sampling event was conducted that collected groundwater samples from four depths at four sampling locations. One location was collected from one sampling location along the north property boundary – in an upgradient direction and three sampling locations were advanced along Alice Street south of the Site – in a downgradient direction from the Site. The samples along Alice Street samples were collected in an attempt to delineate the downgradient edge of the VOCs detected in the first sampling event. Analytical results indicated no PCE or degradation products were detected on the upgradient boundary of the Site. PCE and degradation products were detected in downgradient sampling locations at elevated concentrations from two sampling locations. The greatest concentrations of these VOCs were identified in the 45 to 47 foot interval below land surface with PCE, TCE, and cis-1,2 DCE detected at concentrations of 1,700, 15,000, and 6,300 µg/L, respectively. Concentrations of PCE detected in other samples along Alice Street ranged from non-detect to 66 µg/L.

A third groundwater sampling event was conducted that collected groundwater samples from four depths at three sampling locations along Bernard Street in a downgradient direction from Alice Street. Analytical results detected PCE from eight samples and 1,2-DCE in one sample at concentrations below NYSDEC AWQSGV. There were no VOCs detected from samples along Bernard Street at concentrations above NYSDEC AWQSGV.

A fourth groundwater sampling event in December 2009 identified that, in general, concentrations of VOCs detected in groundwater were similar to the 2006 conceptual Site model. That is that onsite contaminants are moving horizontally with groundwater to the south and sinking to the top of the clay-confining unit. Contaminants are at higher concentrations onsite and appear to be degrading in the existing environment downgradient from the site.

Although the general conceptual model for contaminants at the Site had not changed from 2006 to 2009, there were significant increases in concentrations observed in the deep zone onsite and substantial decreases in the deep zone offsite between the 2006 RIR and December 2009. A summary of groundwater samples collected at the Site is presented as Table 1.

2.7 Soil Vapor and Indoor Air

Initial soil vapor screening developed qualitative results at three locations. Results suggested the potential for a shallow VOC source area that is limited in extent and onsite. Shallow soil samples collected onsite did identify PCE and toluene; however, these analytes were at concentrations below NYSDEC RSCOs.

Soil vapor samples collected from properties south of the Site identified VOCs in soil vapor suggesting either volatilization of VOCs from groundwater or a soil vapor migration pathway from a contaminated area. Concentrations of VOCs in soil gas near the Site were below indoor air guidance values. This area is where impacted groundwater is closest to the vadose zone and therefore concentrations of VOCs in soil vapor are expected to be the greatest. Indoor air samples and crawlspace air samples were collected to determine if VOCs were potentially entering homes or accumulating in crawlspaces. The analytical results of indoor air and crawlspace air samples were similar to an ambient air sample.

Soil vapor samples collected from the property west of the Site (1812 Merrick Road) identified VOCs in soil vapor in the parking lot and beneath the building suggesting either potential source material west of the Site, or a soil vapor migration pathway from the Site in that direction. Although PCE was detected in sub-slab soil vapor collected from the building at 1812 Merrick Road at a concentration of 64 µg/m3, the indoor air concentration of 66 µg/m3 collected from the same building is more likely related to the outdoor ambient air concentration of 470 µg/m3, rather than from soil vapor intrusion. This opinion is based the good condition of the concrete slab at 1812 Merrick Road and the PCE concentration in the ambient air sample that was greater than the previous background sample collected at the Site.

2.8 Remedial Action Objectives

Based upon the evaluation of the current environmental data, as described above and detailed in the RRIR (Roux Associates, 2006), and taking into consideration current and potential future land use and identification of the actual or potential public health and/or environmental exposures, the

Remedial Action Objectives ("RAOs") and applicable Standards, Criteria and Guidance ("SCGs") for the Site are:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards;
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater;
- Prevent ingestion and direct contact with contaminated soil, prevent inhalation of, or exposure from, contaminants volatilizing from contaminants in soil;
- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable,
- Remove the sources of groundwater, soil, and soil vapor contamination; and
- Prevent migration of contaminants that would result in additional groundwater contamination.

3.0 PROPOSED REMEDY

The proposed remedy to treat impacted groundwater and soil vapor at the Site will achieve mass reduction of chlorinated volatile organic compounds ("CVOCs") in onsite and offsite groundwater and reduce off-site impact to offsite soil vapor to the extent practicable.. The following sections describe the proposed remedy

3.1 Air Sparging/Soil Vapor Extraction

As stated in Section 2.0, CVOCs have been detected in groundwater at the Site. Due to the presence of sandy soil and that a soil vapor extraction (SVE) system had operated at the Site, an air sparging(AS)/SVE system is proposed to be installed at the Site to actively remediate CVOCs present within the on-site groundwater plume.

Air sparging is a remediation technique that uses the injection of pressurized air into the subsurface at depths below the water table. Air injected into the zone of impacted groundwater causes high vapor pressure chemicals to volatilize, effectively "stripping" the volatile chemicals from impacted groundwater. Injected air also causes volatilization of chemicals from saturated soils and from soils in the vadose zone. The vapors migrate upward toward the vadose zone, where they are captured by an SVE system.

SVE is an in-situ remediation technique designed to remove and treat VOCs from the soil in the vadose zone. A vacuum is applied to impacted soil to extract VOC vapors. The vapors are extracted from the soil and conveyed through a piping network to a treatment system, where they are treated prior to discharge using granular activated carbon ("GAC") units arranged in series.

3.2 *In Situ* Chemical Oxidation

*In Situ c*hemical oxidation ("ISCO") is the process of adding an oxidizing agent (e.g., potassium permanganate) to chemically transform a contaminant through oxidation-reduction reactions. During the oxidation-reduction reaction, an exchange of electrons affects the oxidation state of the contaminant and as a result, double carbon bonds are broken. The double carbon bonds that characterize chlorinated ethenes are far more reactive than the single carbon bonds of chlorinated ethanes. The contaminant is either completely destroyed or converted to smaller less hazardous

compounds. These compounds may also be oxidized to eventually yield carbon dioxide, water and chloride.

3.3 Offsite Soil Vapor Extraction

As stated in Section 2.7, VOCs have been detected in soil vapor in the parking lot and beneath the building to the west of the Site, suggesting either potential source material in that area, or a soil vapor migration pathway from the Site in that direction. To accomplish the RAOs for soil vapor, two depressurization points will be added to the soil vapor extraction system (Figure 5) on the far west side of the Site, adjacent to the southwest corner of the building. It is expected that these point will in effect create a sub-slab and sub-parking lot depressurization to the west and thereby draw impacted soil vapor into the SVE system for GAC treatment as necessary.

4.0 ENGINEERING EVALUATION OF PROPOSED REMEDY

The purpose of this engineering evaluation is to demonstrate that the proposed remedy can achieve the cleanup objectives for the Site. This section evaluates the proposed remedy against the factors given in 6 NYCRR 375-1.8(f).

4.1 Overall Protection of Human Health and the Environment

The proposed remedy will achieve each of the cleanup objectives at the Site. The air sparge system will volatilize CVOCs from the on-site groundwater and the SVE and sub-slab depressurization systems will effectively collect and treat the CVOCs from the soil gas. CVOCs will be reduced on-site to the NYSDEC Water Quality Standards Class GA groundwater, to the extent possible.

VOCs will be reduced off-site to the NYSDEC Water Quality Standards Class GA groundwater, to the extent possible, by the injection of ISCO agents combined with groundwater monitoring. The ISCO agents will accelerate the destruction of VOCs in the groundwater, while the groundwater monitoring will ensure the effectiveness of the remedy as natural degradation processes continue to achieve the remediation goal.

The remediation of the shallow groundwater as proposed is expected to remove the source of CVOCs in soil gas. By removing the source, the continued dissipation of soil gas concentrations will occur over time thus further reducing potential risk.

4.2 Compliance with Applicable Regulatory Standards, Criteria and Guidelines

The applicable regulatory standard that applies to the proposed groundwater remedy at the Site is the NYSDEC Water Quality Standards Class GA groundwater. The proposed remedy will utilize an AS/SVE system to reduce the concentration of CVOCs in the on-site groundwater and ISCO injections to reduce the concentrations of CVOCs in the off-site groundwater.

Soil vapor intrusion will be evaluated using the New York State Department of Health ("NYSDOH") soil vapor intrusion decision matrix guidance values (NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006).

4.3 Long-Term Effectiveness and Permanence

The proposed remedy will be a permanent solution after the cleanup objectives described in Section 2.8 are achieved. The AS/SVE system will be effective at reducing the mass of CVOCs.

The remedy for groundwater will reduce in effectiveness as the oxidizing agents are used up. Subsequent groundwater sampling rounds may determine that additional injections of ISCO are required.

After the cleanup objectives described in Section 2.8 are managed to the extent practicable, no significant threats, exposure pathways or risks to the public or environment will be present at the Site.

4.4 Reduction of Toxicity, Mobility, and Volume

The proposed remedy will reduce the mass in the groundwater impacted with CVOCs located beneath the Site property as well as offsite to the south. The AS/SVE and ISCO injection will be irreversible, and the former will be operated to the extent practicable.

4.5 Short-Term Impacts and Effectiveness

The risks posed to the community, workers and environment due to the implementation of the proposed remedy are minimal:

- During the operation of the AS/SVE system, risk to community will include SVE off-gas vapor inhalation, and potential noise levels coming from the blowers. The off-gas from the SVE system will be treated with vapor phase carbon prior to discharge to the atmosphere. The AS/SVE system will be installed in a treatment enclosure to provide acceptable noise levels. The risks to the community during any construction activities related to the AS/SVE system are minimal.

- It is possible that workers on the Site will be exposed to CVOC concentrations during construction and operation and maintenance of the AS/SVE system. The potential risks include material handling, electrical shock, off-gas vapor inhalation, general trip hazards, and noise. The workers will be required to review a HASP prepared for the Site.

- Possible environmental risks during air sparging include the potential for uncontrolled migration of CVOCs. In addition, the off-gas from the SVE system may cause air pollution. During the AS/SVE system operation, noise pollution will also be a possible risk. The air sparge system will be operated in conjunction with the SVE system at all times. The SVE system will be designed to capture all vapors from the air sparge system. An interlock will be provided between the air sparge blower and the SVE blower such that

if the SVE blower malfunctions the air sparge blower will shut down. The off-gas from the SVE system will be treated with vapor phase carbon prior to discharge to the atmosphere.

- It is possible that workers on the Site will be exposed to VOC concentrations during the ISCO injections. The potential risks include material handling, electrical shock, off-gas vapor inhalation, general trip hazards, and noise. The workers will be required to review a HASP prepared for the Site.

Remedial Engineering currently estimates the time to remediate intermediate groundwater on-site at approximately two years, based on the objective of significant mass reduction of the on-site groundwater plume.

4.6 Implementability

As the back of the Site is unpaved and open, implementation of the proposed remedy is not anticipated to encounter any difficulties. By placing the ISCO substrates in temporary injection points off-site, implementation of the proposed remedy is not anticipated to encounter any significant difficulties. Expertise in ISCO injections is readily available through product suppliers, literature and local contractors. Supplies for ISCO injections are readily available.

4.7 Cost-Effectiveness

The implementation and monitoring costs associated with the proposed remedy are estimated at approximately $100,000. It is anticipated that short-term groundwater monitoring will be required.

4.8 Community Acceptance

It has been assumed that the community will be accepting of the alternative.

4.9 Land Use

Following implementation of the remedy, the Site will be restored and the injection points are temporary, thereby retaining compatibility with future land use.

5.0 PROPOSED REMEDY IMPLEMENTATION PLAN

The proposed remedy implementation plan provides a more detailed description of the proposed remedy and how the selected remedial technologies will be implemented to meet the cleanup objectives discussed in Section 2.8. A Community Air Monitoring Plan ("CAMP") consisting of monitoring the work area for VOCs will be followed during any ground intrusive activities (Appendix A).

5.1 AS/SVE System

A layout of the proposed AS/SVE system is shown on Figure 5. The AS/SVE system will consist of 4 AS wells, 2 SVE wells, and 2 depressurization points. The area of SVE/vacuum influence, depicted on the figures by the dashed circles, is estimated. The effectiveness of the system will be evaluated following installation via vacuum measurement testing. Vacuum readings at each SVE well and depressurization point will be collected, as well as vacuum readings at temporary monitoring locations that will be installed on the properties to the south and west. Results of initial SVE/vacuum influence monitoring will be presented to the NYSDEC for review and approval.

5.1.1 AS Wells

Four (4) AS wells will be installed at the Site. The proposed AS wells will be constructed of 1-inch diameter Schedule 80 polyvinyl chloride (PVC) casing and a two-foot long number 10 slot well screen. The AS wells will consist of two deep AS wells (AS-1D and AS-2D) and two shallow AS wells (AS-1S and AS-2S). The deep AS wells will installed to a depth of 46 feet below land surface ("ft bls"). The two shallow AS wells will installed to a depth of 16 ft bls. Each AS well will be equipped with manual control valves and pressure gauges to allow for air flow and pressure adjustments to optimize the operation of the system. The AS wells will manifold together using aboveground or belowground piping which will connect directly to the AS blower. The minimum pressure required to overcome the hydrostatic and formation pressure is estimated to be approximately 17 pounds per square inch (psi). The AS blower will be capable of supplying a total of approximately 40 cubic feet per minute ("cfm") and 20 psi.

To optimize the operation of the system or reduce noise levels to the residential area south of the Site, operation of AS wells may be cycled (e.g., all AS wells off at night, one AS well off for

several weeks). Any configuration of the AS system that does not include full time operation of all AS wells will be reported to the NYSDEC for review and approval.

5.1.2 SVE Wells

Two SVE wells (SVE-1 and SVE-2) will be installed at the Site. The SVE wells will be constructed of 4-inch diameter Schedule 40 PVC to a depth of 6 ft bls. The screened interval of the SVE well will be from 2 to 6 feet bls. The initial construction of the SVE wells will include concrete in borehole annulus from approximately 1.5 ft bls to the surface to minimize short circuiting air from the surface. If this construction limits the extent of SVE well influence beyond system design goals, additional efforts will be evaluated to improve system performance. Horizontal extraction wells were considered to limit the amount of water and/or water vapor drawn into the system, however, installation of vertical wells is preferred and water entering the system will be addressed with a knockout tank.

Each SVE well will be equipped with valves to control the vacuum and flow to each well. The SVE wells will manifold together using aboveground or belowground piping that will connect directly to the SVE blower. The discharge from the blower will be treated with vapor phase carbon before discharging to the atmosphere. The vapor phase carbon will consist of two 400-pound vapor phase carbon vessels in series. The SVE blower will be sized to handle a total of approximately 200 cfm and 15 inches of water column.

The AS/SVE system equipment will be housed in an approximate 16 ft by 8 ft temporary enclosure. The electrical service to operate the AS/SVE system equipment will be obtained from the existing power located on-site. Controls and instrumentation for operation of the AS/SVE system will be located in the temporary enclosure. Interlocks will be provided between the SVE blower and AS blower so that if the SVE blower fails the AS blower will turn off. Furthermore, as discussed in section 5.1.1, operation of AS wells may be cycled to optimize the system or reduced noise levels. All configurations of the AS system will include full time operation of all SVE wells.

5.1.3 Depressurization Points

Two depressurization points (DP-1 and DP-2) will be installed at the Site. The points will be constructed of 4-inch diameter Schedule 40 PVC to a depth of 6 ft bls. The screened interval of the SVE well will be from 2 to 6 feet bls. Each point will be equipped with valves to control the vacuum and flow to each well. The depressurization points will manifold together using aboveground or belowground piping that will connect directly to the SVE blower as described above.

5.1.4 AS/SVE System Monitoring

The AS/SVE system will be monitored on weekly basis for the first month of operation, every two weeks during the second month of operation, and monthly thereafter during the system operation. All necessary maintenance will be conducted. The following items will be monitored and recorded to ensure that the AS/SVE system is operating properly:

- vacuum readings at each SVE well and depressurization point;
- air flow to the SVE blower;
- pressure at each AS well;
- photo-ionization detector (PID) readings from vapor samples collected from the effluent of the SVE system; and
- collecting influent and effluent air samples of the SVE system for VOCs on a monthly basis.

5.1.5 SVE Influence Monitoring

Following the first week of SVE operation, the effectiveness of the system will be evaluated via vacuum measurement testing. Vacuum readings at each SVE well and depressurization point will be collected, as well as vacuum readings at temporary soil vapor points. One temporary soil vapor points will be installed on the eastern property boundary of the Site, one temporary soil vapor point will be installed on the north side of Alice Street, and one temporary soil vapor point will be installed on the restaurant property to the west (second property west). Soil vapor points will be installed from approximately two to three feet below land surface. If a soil vapor point does not show vacuum influence, additional temporary points will be installed closer to the Site until the effectiveness of the system has been determined. Results of initial SVE/vacuum influence monitoring will be presented to the NYSDEC for review and approval.

5.2 Off-Site ISCO Injections

The off-site injections will be focused along the north side of Alice Street (Figure 6). The ISCO material will be injected using a Geoprobe™ unit spaced approximately 5, 15, and 25 feet to the east and west of the MW-2 cluster. The depth of ISCO injection will extend from approximately 40 to 45 ft bls (depth to groundwater is approximately 6 ft bls). Approximately 100 pounds of the ISCO material will be used at each injection point. The amount of ISCO material may be altered depending on the analytical results of the baseline round of groundwater sampling (discussed in detail in Section 8.3.1). The ISCO material will be injected in one event.

A United States Environmental Protection Agency ("USEPA") Underground Injection Control (UIC) program authorization will be obtained prior to the addition of any chemical being injected to the subsurface.

5.3 Groundwater Monitoring

To assess the performance of the groundwater remedy, a groundwater monitoring program will be established. The groundwater monitoring program will include two components: baseline sampling and performance monitoring.

5.3.1 Baseline Sampling

Prior to initiation of the groundwater remedy, baseline groundwater sampling will be performed to evaluate levels of VOCs in the groundwater zone. During the baseline testing, existing monitoring wells MW-1S, MW-1D, MW-2S, and MW-2D will be sampled and analyzed for VOCs.

Prior to sample and data collection, the monitoring wells will be purged using low-flow sampling procedures. Samples will be collected using a flow through cell to prevent sample contact with atmospheric air.

5.3.2 Performance Monitoring

Following initiation of the groundwater remedy, performance monitoring samples will be collected from monitoring wells MW-1S, MW-1D, MW-2S, and MW-2D every three months for the first year of operation of the AS/SVE system and every six months thereafter. A

comprehensive round of groundwater samples will be collected on an annual basis during system operation (MW-1S, MW-1D, MW-2S, MW-2D, and MW-3D). Groundwater samples will be sent to a New York State Department of Health approved laboratory and analyzed for VOCs.

5.3.3 Private Well Survey

Prior to the baseline sampling event, a draft Private Well Survey Questionnaire will be submitted to the NYSDEC for review. Following approval, the questionnaire will be mailed to the properties highlighted in Figure 7. In general, this includes an area boarded to the north by Alice Street (all homes on Alice Street), Beach Drive to the west (only homes on the east side of Beach Drive), Florence Street and Elizabeth Court to the south (only homes on the north side of Florence Street and all homes on Elizabeth Court), Montauk Avenue to the east (only homes on the west side of Montauk Avenue) and the Norman J. Levy Lakeside School to the east.

Following completion of the private well survey, the collected information will be presented to the NYSDEC and all discovered wells will be reviewed with the NYSDEC for potential inclusion in the baseline or a subsequent sampling event.

5.4 AS/SVE System Shutdown

A significant reduction in VOC mass is expected within an approximate 6 to 12 month operational period. During this period, the following rationale will be utilized to assess the effectiveness of the AS/SVE system, and determine the optimum time to permanently shut down the system.

The mass of VOCs that are removed from the groundwater will be determined every three to six months. If, in any two consecutive monitoring periods of operation, the mass of VOCs which have been removed in those monitoring periods is less than or equal to 10 percent of the maximum mass of VOCs removed in any one prior period, the AS/SVE system will be temporarily shut down for one month.

A reduction in the mass of VOCs removed in two monitoring periods to 10 percent of the maximum mass previously removed in any one monitoring period is indicative of a significant decline in effectiveness of the AS/SVE system. Essentially, when this criterion is reached, it would take an approximately nine months or longer of continued operation at the reduced mass of

CVOCs removal rate (<10 percent) to extract an amount equal to the maximum mass of CVOCs that had been removed in the maximum prior period. At this point, the criterion illustrates that the operation of the AS/SVE system has reached a point of diminishing returns.

5.4.1 Post-Remedial Monitoring of AS/SVE System

After the AS/SVE system shutdown and mass reduction has occurred at the Site, groundwater monitoring will continue for the period of six months. Monitoring will consist of two consecutive quarterly sampling rounds at all monitoring wells installed at the Site. Samples collected from monitoring wells will be analyzed for VOCs.

5.5 Proposed Remedy Implementation Schedule

The schedule for the proposed remedy activities is as follows:

- RAWP Submittal – February 1, 2012
- NYSDEC Review of RAWP – March 2012
- Response to NYSDEC Comments to RAWP – April 2012
- NYSDEC Approval of RAWP – May 2012
- USEPA Subsurface Injection Approval – July 2012
- Response to Private Well Survey – July 2012
- Installation of AS/SVE System – July 2012
- Operation of AS/SVE System – August 2012
- Off-Site ISCO Injection – August 2012

5.6 Project Reporting

The Final Engineering Report (FER) will be provided following start-up of the AS/SVE system. The FER will include items such as: as-built drawings, if necessary, operation and maintenance data, and any monitoring results.

6.0 INSTITUTIONAL CONTROLS

As indicated in Section X of the Voluntary Cleanup Agreement for the Site, within 60 days of the NYSDEC's approval of the Remediation Work Plan, the Volunteer shall record a NYSDEC-approved instrument to run with the land with the County Clerk in Nassau County, which is substantially similar to Exhibit "E" attached to the Voluntary Cleanup Agreement (Appendix B).

Sincerely,

REMEDIAL ENGINEERING, P.C.

Glenn Netuschil, P.E.
Senior Engineer

ROUX ASSOCIATES, INC.

Michael Roux
Principal Hydrogeologist

7.0 REFERENCES

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Table 1. Summary of Volatile Organic Compounds Detected in Groundwater

Table 1. Summary of Volatile Organic Compounds Detected in Groundwater, Busy Bee Cleaners, Merrick, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs[1] (µg/L)	**Sample Location:** / **Sample Depth (ft bls):** / **Sample Date:**	TW-101 6-8 12/30/03	TW-101 DUP 6-8 12/30/03	TW-101 19-21 12/30/03	TW-101 32-34 12/30/03	TW-101 45-47 12/30/03	TW-102 6-8 12/29/03	TW-102 19-21 12/29/03	TW-102 32-34 12/29/03	TW-102 45-47 12/29/03	MW-1S 13 12/15/2009	MW-1D 45 12/15/2009
1,1,1-Trichloroethane	5		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	40 U	0.4 U	0.8 U	0.4 U	100 U	100 U
1,1,2,2-Tetrachloroethane	5		0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	70 U	0.7 U	1 U	0.7 U	100 U	100 U
1,1,2-Trichloroethane	1		0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	80 U	0.8 U	2 U	0.8 U	100 U	100 U
1,1-Dichloroethane	5		0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	60 U	0.6 U	1 U	0.6 U	100 U	100 U
1,1-Dichloroethene	5		0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	80 U	0.8 U	2 U	0.8 U	100 U	100 U
1,2-Dichloroethane	0.6		0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	30 U	0.3 U	0.6 U	0.3 U	50 U	50 U
1,2-Dichloroethene, cis	5		**13**	**12**	2 J	2 J	**39**	**1700**	**8**	**67**	**37**	**3,300**	**2,700**
1,2-Dichloroethene, trans	5		0.6 U	0.6 U	0.6 U	0.6 U	4 J	60 U	0.6 U	2 J	0.7 J	100 U	100 U
1,2-Dichloropropane	1		0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	60 U	0.6 U	1 U	0.6 U	100 U	100 U
1,3-Dichloropropene, cis	5		0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	60 U	0.6 U	1 U	0.6 U	100 U	100 U
1,3-Dichloropropene, trans	5		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	40 U	0.4 U	0.8 U	0.4 U	100 U	100 U
2-Butanone	50		1 U	1 U	1 U	1 U	1 U	110 U	1 U	2 U	1 U	100 U	100 U
2-Hexanone	50		1 U	1 U	1 U	1 U	1 U	130 U	1 U	3 U	1 U	100 U	100 U
4-Methyl-2-pentanone	--		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	50 U	0.5 U	1 U	0.5 U	100 U	100 U
Acetone	50		6 J	6 J	2 U	7 J	4 J	190 U	2 U	4 U	12	500 U	500 U
Benzene	1		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	40 U	0.4 U	0.8 U	0.4 U	50 U	50 U
Bromodichloromethane	50		0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	60 U	0.6 U	1 U	0.6 U	100 U	100 U
Bromoform	50		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	40 U	0.4 U	0.8 U	0.4 U	100 U	100 U
Bromomethane	5		3 U	3 U	3 U	3 U	3 U	310 U	3 U	6 U	3 U	100 U	100 U
Carbon disulfide	--		0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	60 U	0.6 U	1 U	0.6 U	100 U	100 U
Carbon tetrachloride	5		0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	30 U	0.3 U	0.6 U	0.3 U	100 U	100 U
Chlorobenzene	5		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	20 U	0.2 U	0.4 U	0.2 U	100 U	100 U
Chloroethane	5		0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	80 U	0.8 U	2 U	0.8 U	100 U	100 U
Chloroform	7		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	40 U	0.4 U	0.8 U	0.4 U	100 U	100 U
Chloromethane	5		1 U	1 U	1 U	1 U	1 U	100 U	1 U	2 U	1 U	100 U	100 U
Dibromochloromethane	50		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	20 U	0.2 U	0.4 U	0.2 U	100 U	100 U
Ethylbenzene	5		5	3 J	0.4 J	0.3 U	0.3 U	30 U	0.3 U	0.6 U	0.3 U	100 U	100 U
Methylene chloride	5		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	40 U	0.4 U	0.8 U	0.4 U	100 U	100 U
Styrene	5		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	40 U	0.4 U	0.8 U	0.4 U	100 U	100 U
Tetrachloroethene	5		**85**	**78**	**11**	**6**	**6**	**9700**	**31**	**160**	**120**	**9,800**	**5,800**
Toluene	5		0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	30 U	0.3 U	0.6 U	0.3 U	100 U	100 U
Trichloroethene	5		**17**	**15**	3 J	2 J	**110**	**700**	4 J	**62**	**69**	**1,200**	**16,000**
Vinyl acetate	--		2 U	2 U	2 U	2 U	2 U	150 U	2 U	3 U	2 U	na	na
Vinyl chloride	2		1 U	1 U	1 U	1 U	1 U	100 U	1 U	2 U	1 U	100 U	100 U
Xylenes (total)	5		**27**	**18**	3 J	2 J	1 U	100 U	1 U	2 U	1 U	100 U	100 U

Notes:

[1] New York State Department of Environmental Conservation (NYSDEC) Ambient Water-Quality Standards and Guidance Values (AWQSGVs)

µg/L - Micrograms per liter

A - Concentration exceeds the instrument calibration range or is below the reporting limit

B - Detected in laboratory blank

U - Analyte not detected at reported detection limit.

- - - No NYSDEC AWQSGV available

bold - Concentrations highlighted in bold represent detections that exceed NYSDEC AWQSGVs.

ft bls - Feet below land surface

DUP - Duplicate

Table 1. Summary of Volatile Organic Compounds Detected in Groundwater, Busy Bee Cleaners, Merrick, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs[1] (µg/L)	Sample Location:	TW-103	TW-103	TW-103	TW-103	TW-104	TW-104	TW-104	TW-104	TW-105	TW-105	TW-105
		Sample Depth (ft bls):	6-8	19-21	32-34	45-47	6-8	19-21	32-34	45-47	6-8	19-21	32-34
		Sample Date:	12/29/03	12/29/03	12/29/03	12/30/03	08/30/04	08/30/04	08/30/04	08/30/04	08/30/04	08/30/04	08/30/04
1,1,1-Trichloroethane	5		0.4 U	0.4 U	0.4 U	0.4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5		0.7 U	0.7 U	0.7 U	0.7 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	1		0.8 U	0.8 U	0.8 U	0.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5		0.6 U	0.6 U	0.6 U	0.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5		0.8 U	0.8 U	0.8 U	0.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	0.6		0.3 U	0.3 U	0.3 U	0.3 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene, cis	5		**18**	5 J	4 J	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene, trans	5		0.6 U	0.6 U	0.6 U	0.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	1		0.6 U	0.6 U	0.6 U	0.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, cis	5		0.6 U	0.6 U	0.6 U	0.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, trans	5		0.4 U	0.4 U	0.4 U	0.4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	50		1 U	1 U	1 U	1 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50		1 U	1 U	1 U	1 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	--		0.5 U	0.5 U	0.5 U	0.5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50		2 U	2 U	2 U	14	10 U	10 U	10 U	5 J	10 U	10 U	10 U
Benzene	1		0.4 U	0.4 U	0.4 U	0.4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50		0.6 U	0.6 U	0.6 U	0.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	50		0.4 U	0.4 U	0.4 U	0.4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	5		3 U	3 U	3 U	3 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	--		0.8 J	0.6 J	0.6 U	0.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5		0.3 U	0.3 U	0.3 U	0.3 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5		0.2 U	0.2 U	0.2 U	0.2 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	5		0.8 U	0.8 U	0.8 U	0.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	7		0.4 U	0.4 U	0.4 U	0.4 U	5 U	5 U	5 U	5 U	5 U	2 J	5 U
Chloromethane	5		1 U	1 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50		0.2 U	0.2 U	0.2 U	0.2 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5		0.3 U	0.3 U	0.3 U	0.3 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5		0.4 U	0.4 U	0.4 U	0.4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5		0.4 U	0.4 U	0.4 U	0.4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5		**38**	**15**	**10**	**15**	5 U	5 U	5 U	5 U	**9**	5 U	5 U
Toluene	5		0.3 U	0.3 U	0.3 U	0.3 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5		3 J	3 J	3 J	**10**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl acetate	--		2 U	2 U	2 U	2 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	2		1 J	1 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (total)	5		1 U	1 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:

[1] New York State Department of Environmental Conservation (NYSDEC) Ambient Water-Quality Standards and Guidance Values (AWQSGVs)

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bold - Concentrations highlighted in bold represent detections that exceed NYSDEC AWQSGVs.

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Table 1. Summary of Volatile Organic Compounds Detected in Groundwater, Busy Bee Cleaners, Merrick, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs[1] (µg/L)	**Sample Location:** / **Sample Depth (ft bls):** / **Sample Date:**	TW-105 45-47 08/30/04	TW-105 DL 45-47 08/30/04	MW-2S 13 12/15/2009	MW-2D 45 12/15/2009	TW-106 6-8 08/27/04	TW-106 19-21 08/27/04	TW-106 32-34 08/27/04	TW-106 45-47 08/27/04	TW-107 6-8 08/27/04	TW-107 19-21 08/27/04
1,1,1-Trichloroethane	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	1		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5		**12**	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	0.6		5 U	500 U	0.50 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene, cis	5		**5500 A**	**6300**	1.0 U	**2,500**	5 U	**10**	5 U	**28**	5 U	5 U
1,2-Dichloroethene, trans	5		**110**	500 U	1.0 U	**54**	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	1		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, cis	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, trans	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	50		10 U	1000 U	1.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50		10 U	1000 U	1.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	--		10 U	1000 U	1.0 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50		10 U	1000 U	5.0 U	50 U	10 U	10 U	10 U	4 J	10 U	10 U
Benzene	1		5 U	500 U	0.50 U	5.0 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	50		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	--		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	7		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5		0.6 UB	**79 J**	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5		**1600 A**	**1700**	**15**	**67**	5 U	**17**	5 U	**28**	5 U	5 U
Toluene	5		0.5 J	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5		**2200 A**	**15000**	1.0 U	**520**	5 U	**28**	5 U	**66**	5 U	5 U
Vinyl acetate	--		5 U	500 U	na	na	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	2		5 U	500 U	1.0 U	10 U	5 U	5 U	5 U	5 U	**3 J**	5 U
Xylenes (total)	5		5 U	500 U	1 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:

[1] New York State Department of Environmental Conservation (NYSDEC) Ambient Water-Quality Standards and Guidance Values (AWQSGVs)

µg/L - Micrograms per liter

A - Concentration exceeds the instrument calibration range or is below the reporting limit

B - Detected in laboratory blank

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bold - Concentrations highlighted in bold represent detections that exceed NYSDEC AWQSGVs.

ft bls - Feet below land surface

DUP - Duplicate

Table 1. Summary of Volatile Organic Compounds Detected in Groundwater, Busy Bee Cleaners, Merrick, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs[1] (µg/L)	**Sample Location:** / **Sample Depth (ft bls):** / **Sample Date:**	TW-107 DUP 19-21 08/27/04	TW-107 32-34 08/27/04	TW-107 45-47 08/27/04	TW-108 6-8 05/17/05	TW-108 19-21 05/17/05	TW-108 32-34 05/17/05	TW-108 45-47 05/17/05	TW-109 6-8 05/17/05	TW-109 19-21 05/17/05	TW-109 32-34 05/17/05
1,1,1-Trichloroethane	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	1		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	0.6		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene, cis	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene, trans	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	1		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, cis	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, trans	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	50		10 U	10 U	10 U	10 UB	10 UB	10 UB	10 UB	10 UB	10 UB	10 UB
2-Hexanone	50		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	--		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	50		10 U	10 U	10 U	10 U	10 U	10 U	2 J	2.4 J	1.9 J	10 U
Benzene	1		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	50		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	--		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	7		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5		5 U	5 U	5 U	0.4 JB	0.45 JB	0.51 JB	0.47 JB	5 UB	5 UB	5 UB
Styrene	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5		5 U	0.9 J	5 U	5 U	0.59 J	0.72 J	5 U	0.75 J	0.54 J	5 U
Toluene	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl acetate	--		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	2		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (total)	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Notes:

[1] New York State Department of Environmental Conservation (NYSDEC) Ambient Water-Quality Standards and Guidance Values (AWQSGVs)

µg/L - Micrograms per liter

A - Concentration exceeds the instrument calibration range or is below the reporting limit

B - Detected in laboratory blank

U - Analyte not detected at reported detection limit.

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Table 1. Summary of Volatile Organic Compounds Detected in Groundwater, Busy Bee Cleaners, Merrick, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs[1] (µg/L)	**Sample Location:** / **Sample Depth (ft bls):** / **Sample Date:**	TW-109 45-47 05/17/05	MW-3D 45 12/15/2009	TW-110 6-8 05/18/05	TW-110 19-21 05/18/05	TW-110 32-34 05/18/05	TW-110 45-47 05/18/05
1,1,1-Trichloroethane	5		5 U	1.0 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5		5 U	1.0 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	1		5 U	1.0 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5		5 U	1.0 U	5 U	5 U	0.69 J	5 U
1,1-Dichloroethene	5		5 U	1.0 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	0.6		5 U	0.50 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene, cis	5		5 U	**9.5**	5 U	5 U	0.62 J	5 U
1,2-Dichloroethene, trans	5		5 U	1.0 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	1		5 U	1.0 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, cis	5		5 U	1.0 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene, trans	5		5 U	1.0 U	5 U	5 U	5 U	5 U
2-Butanone	50		10 UB	1.0 U	10 UB	10 UB	10 UB	10 UB
2-Hexanone	50		10 U	1.0 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	--		10 U	1.0 U	10 U	10 U	10 U	10 U
Acetone	50		1.6 J	5.0 U	10 U	10 U	10 U	10 U
Benzene	1		5 U	0.50 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50		5 U	1.0 U	5 U	5 U	5 U	5 U
Bromoform	50		5 U	1.0 U	5 U	5 U	5 U	5 U
Bromomethane	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Carbon disulfide	--		5 U	1.0 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Chlorobenzene	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Chloroethane	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Chloroform	7		5 U	1.0 U	5 U	5 U	5 U	5 U
Chloromethane	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50		5 U	1.0 U	5 U	5 U	5 U	5 U
Ethylbenzene	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Methylene chloride	5		5 UB	1.0 U	0.59 JB	0.53 JB	0.54 JB	0.43 JB
Styrene	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5		5 U	1.0 U	5 U	5 U	0.73 J	5 U
Toluene	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Trichloroethene	5		5 U	1.0 U	5 U	5 U	5 U	5 U
Vinyl acetate	--		5 U	na	5 U	5 U	5 U	5 U
Vinyl chloride	2		5 U	1.0 U	5 U	5 U	5 U	5 U
Xylenes (total)	5		5 U	1 U	5 U	5 U	5 U	5 U

Notes:

[1] New York State Department of Environmental Conservation (NYSDEC) Ambient Water-Quality Standards and Guidance Values (AWQSGVs)

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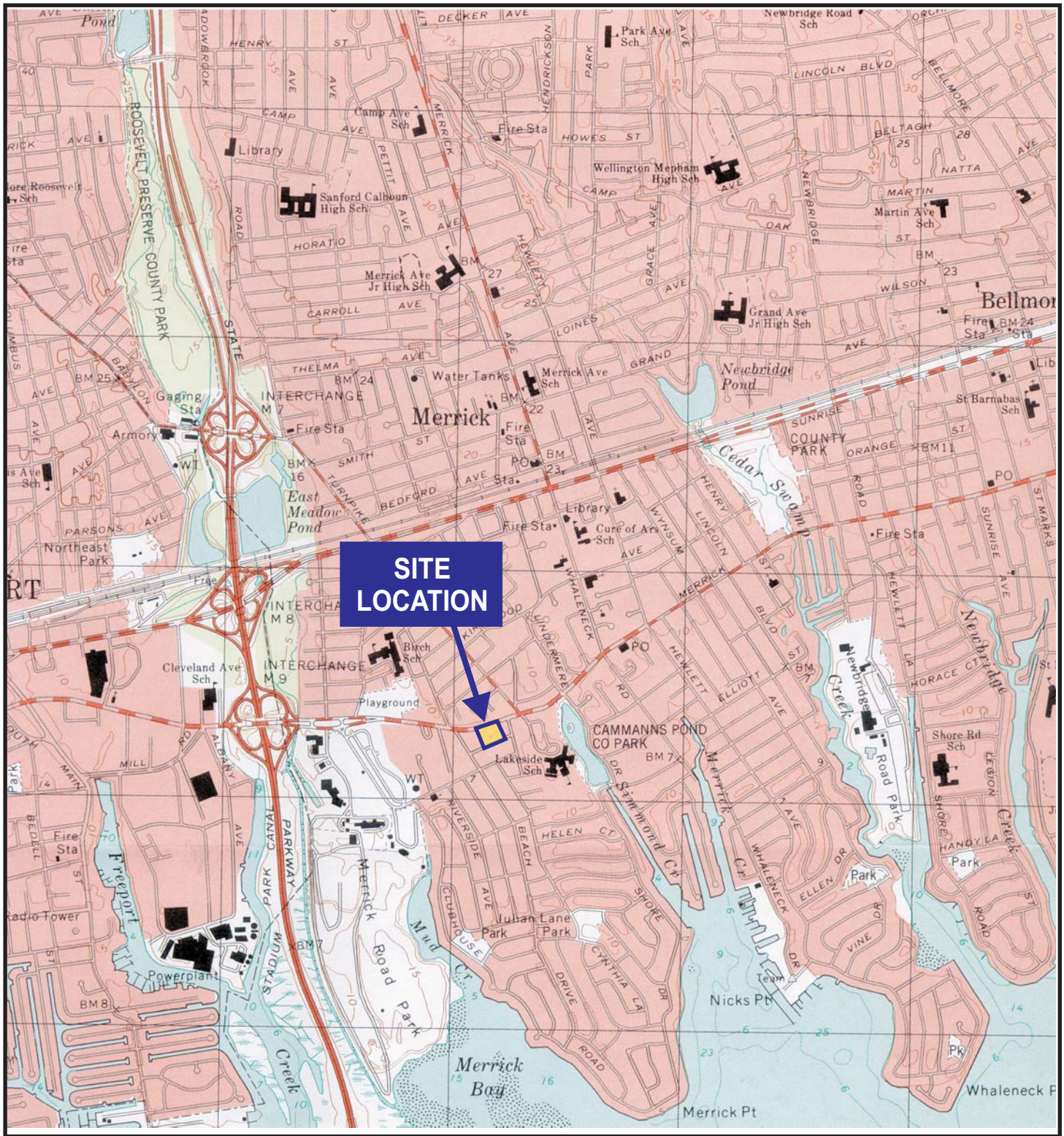
bold - Concentrations highlighted in bold represent detections that exceed NYSDEC AWQSGVs.

ft bls - Feet below land surface

DUP - Duplicate

FIGURES

1. Site Location Map
2. Aerial Photograph
3. Monitoring Well Locations
4. Groundwater Flow June 3, 2005
5. Proposed AS/SVE System Layout
6. Proposed ISCO Injection Locations
7. Private Well Survey Questionnaire Mailing Area



QUADRANGLE LOCATION

SOURCE:
USGS; 1994. Freeport, NY
7.5 Minute Topographic Quadrangle

N

0 2000’

Title:

SITE LOCATION MAP

NYDEC VCP #V00376-1

Prepared for:

BUSY BEE CLEANERS
MERRICK, NEW YORK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: M.R.		Date: 01DEC05	FIGURE
Prepared by: R.K.		Scale: 1:25000	1
Project Mgr.: M.R.		Office: NY	
File No.: BUS10313306.CDR		Project No.: 103201Y	

100' 0 100'

N

Title:

ADJACENT PROPERTIES

NYSDEC VCP # V00376-1

Prepared For:

BUSY BEE CLEANERS

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: S.S.	Date: 01DEC05	FIGURE
Prepared by: S.S.	Scale: AS SHOWN	2
Project Mgr: M.R.	Office: N.Y.	
File No: BUS10313305.WOR	Project: 103201Y	

LEGEND

MW-1S	SHALLOW MONITORING WELL LOCATION
MW-1D	DEEP MONITORING WELL LOCATION
TW-105	TEMPORARY GROUNDWATER SAMPLING LOCATION

80' 0 80'

Title:

MONITORING WELL LOCATIONS

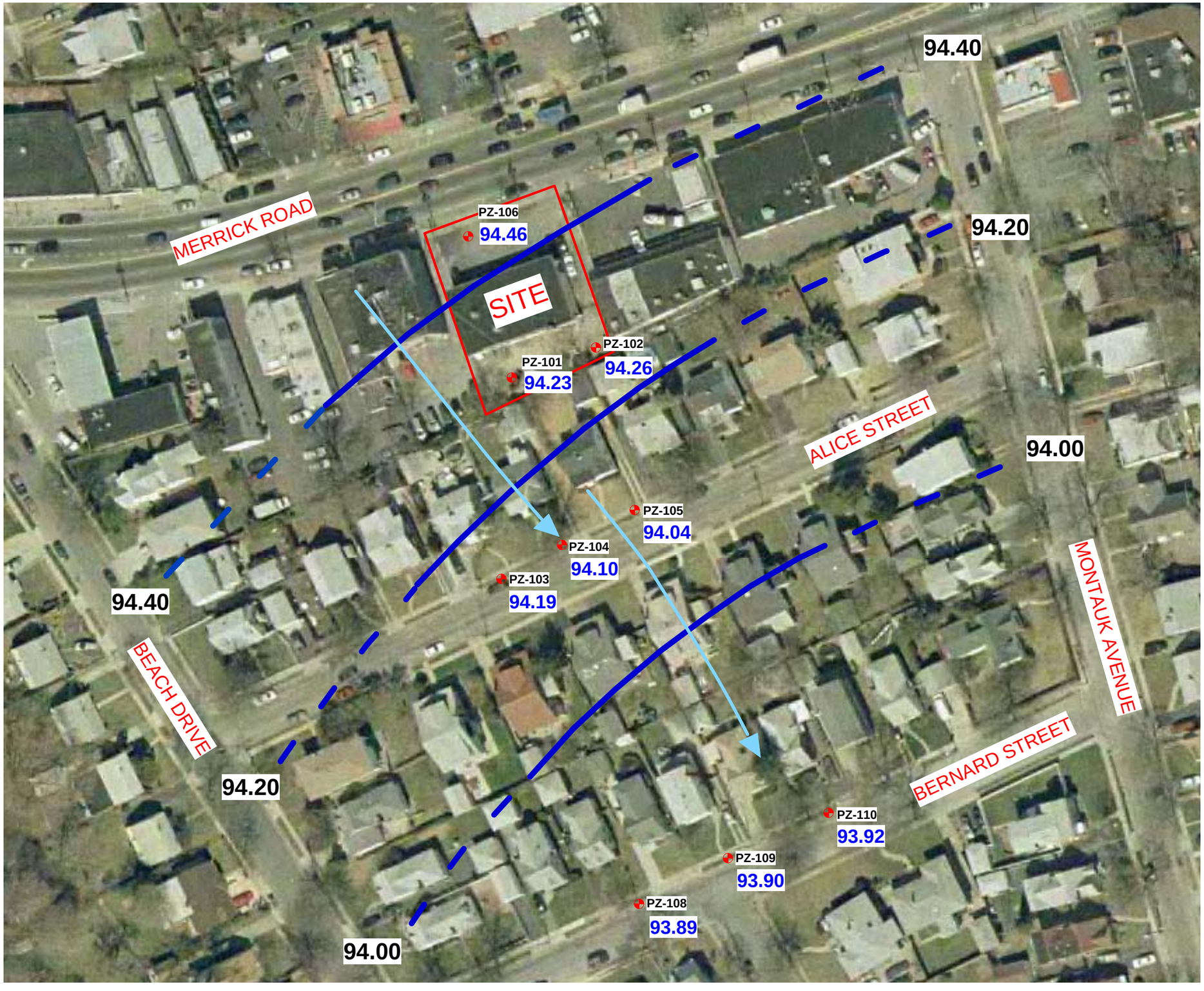
Prepared For:

BUSY BEE CLEANERS
MERRICK, NEW YORK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: M.R.	Date: 14MAY10	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	3
Project Mgr: M.R.	Office: NY	
File No: BUS0115201	Project: 103201Y02	

\BUS1032Y\BUS01Y\152\BUS0115201.DWG



EXPLANATION

94.26 — WATER-LEVEL ELEVATION IN FEET ABOVE SITE REFERENCE POINT

PZ-101 — LOCATION AND DESIGNATION OF PIEZOMETER

94.00 — CONTOUR OF EQUAL WATER-LEVEL ELEVATION IN FEET ABOVE SITE REFERENCE POINT

INFERRED DIRECTION OF GROUNDWATER FLOW

N

65' 0 65'

Title:

GROUNDWATER FLOW JUNE 3, 2005

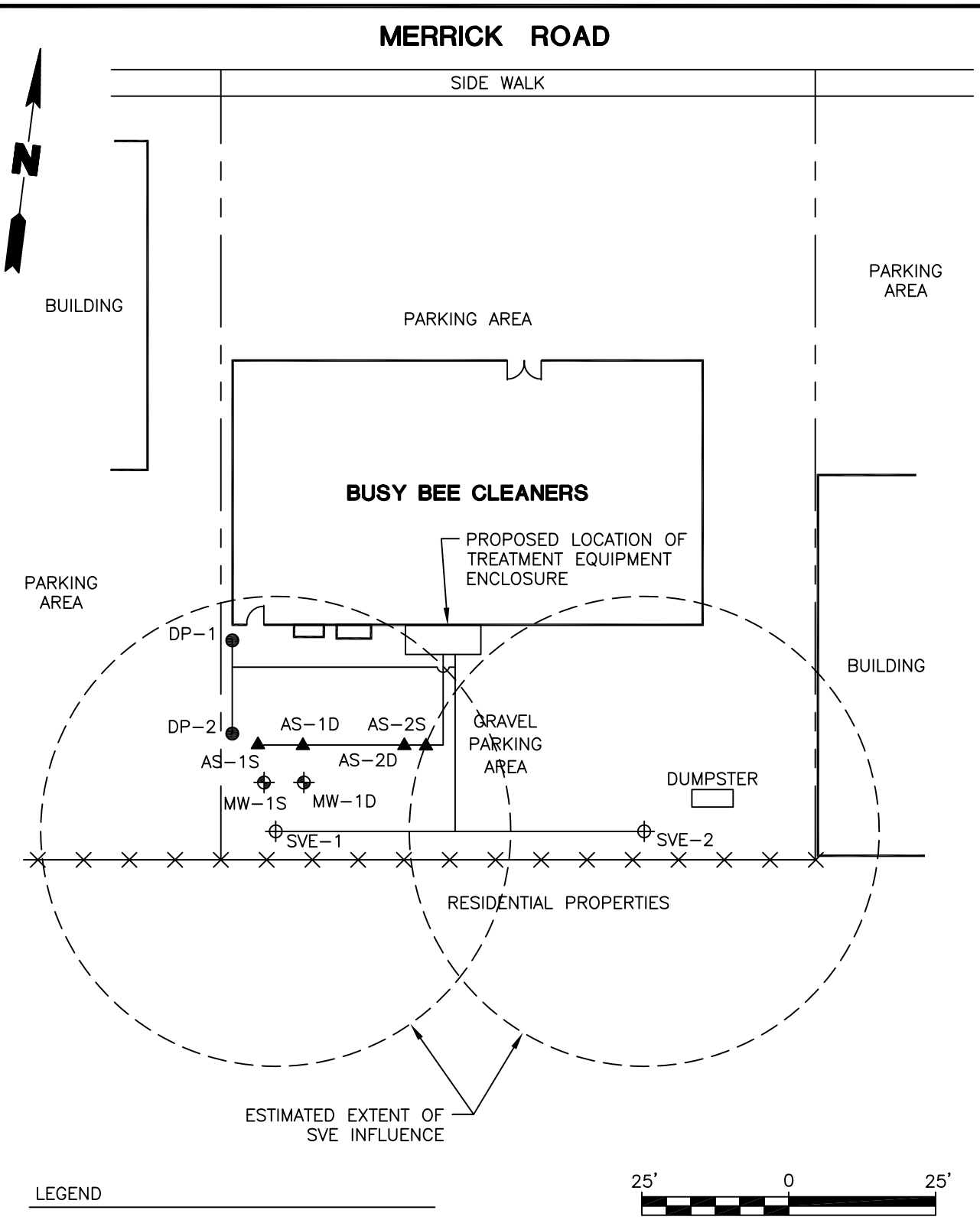
NYSDEC VCP # V00376-1

Prepared For:

BUSY BEE CLEANERS

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: M.R.	Date: 01DEC05	FIGURE 4
Prepared by: K.H.	Scale: AS SHOWN	
Project Mgr: M.R.	Office: N.Y.	
File No: BUS10313306.WOR	Project: 103201Y	



Title:

PROPOSED AS/SVE SYSTEM LAYOUT

NYSDEC VCP# V00376-1

Prepared For:

BUSY BEE CLEANERS
MERRICK, NEW YORK

ROUX ASSOCIATES, INC. *Environmental Consulting and Management*	Compiled by: M.R.	Date: 31JAN12	FIGURE 5
	Prepared by: J.A.D.	Scale: AS SHOWN	
	Project Mgr: M.R.	Project: 1032.0001Y003	
	File: 1032.0001Y153.01.DWG		

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LEGEND

MW-1S ● SHALLOW MONITORING WELL LOCATION

MW-1D ● DEEP MONITORING WELL LOCATION

⊠ PROPOSED ISCO INJECTION POINT

Title:

PROPOSED ISCO INJECTION LOCATIONS

Prepared For:

BUSY BEE CLEANERS
MERRICK, NEW YORK

ROUX ASSOCIATES, INC.
Environmental Consulting and Management

Compiled by: M.R.	Date: 09NOV11	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	6
Project Mgr: M.R.	Project: 1032.0001Y002	
File: 1032.0001Y153.03.DWG		

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N

Title:

PRIVATE WELL SURVEY QUESTIONNAIRE MAILING AREA

NYSDEC VCP# V00376-1

Prepared for:

BUSY BEE CLEANERS
MERRICK, NEW YORK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: M.R.	Date: 31JAN12	FIGURE
Prepared by: J.A.D.	Scale: NTS	7
Project Mgr.: M.R.	Project No.: 1032.0001Y003	
File: 1032.0001Y153.04.CDR		

V:\CAD\PROJECTS\1032Y0001Y153\1032.0001Y153.04.CDR

APPENDICES

A. Community Air Monitoring Plan (CAMP)

B. Exhibit “E” to the Voluntary Cleanup Agreement

Community Air Monitoring Plan

February 1, 2012

COMMUNITY AIR MONITORING PLAN

1818 Merrick Road
Merrick, New York

Prepared for:

BUSY BEE CLEANERS
1818 Merrick Road
Merrick, New York 11566-4530

Remedial Engineering, P.C.
Environmental Engineers

and ROUX ASSOCIATES, INC.

209 Shafter Street, Islandia, New York 11749 ♦ 631-232-2600

TABLE OF CONTENTS

CERTIFICATION ii

1.0 INTRODUCTION 1

2.0 AIR MONITORING PROCEDURES FOR REMEDIAL activities 2
2.1 VOC Monitoring 2
2.2.1 Potential Corrective Measures and VOC Suppression Techniques 3

APPENDIX

A. Action Limit Report

CERTIFICATION

I, Glenn Netuschil, certify that I am currently a NYS registered professional engineer and that this Community Air Monitoring Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Glenn Netuschil, P.E.	February 1, 2012	
NYS Professional Engineer #074741	Date	Signature

1.0 INTRODUCTION

This Community Air Monitoring Plan ("CAMP") for soil excavation has been prepared by Roux Associates, Inc. ("Roux Associates") and Remedial Engineering, P.C. ("Remedial Engineering"), on behalf of Busy Bee Cleaners ("Busy Bee") for the 1818 Merrick Road site in Merrick, New York.

Compliance with this CAMP is required during all activities associated with soil excavation that have the potential to generate volatile organic compounds ("VOCs"). These activities include excavation of soils, stockpiling, loading, and backfilling. This CAMP has been prepared to ensure that remediation activities do not adversely affect passersby, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of construction-related contaminants to offsite areas.

This CAMP is consistent with the New York State Department of Health ("NYSDOH") Generic Community Air Monitoring Plan, which is included as Appendix 1A of the New York State Department of Environmental Conservation ("NYSDEC") "Draft DER-10 Technical Guidance for Site Investigation and Remediation ("DER-10")," dated May 3, 2010.

2.0 AIR MONITORING PROCEDURES FOR REMEDIAL activities

VOCs are the constituents of concern at the Site. The appropriate method to monitor air for these constituents during remediation activities is through real-time VOC monitoring.

2.1 VOC Monitoring

VOCs will be monitored continuously in the work zone during all remediation activities. Due to the small work area, there will be no upwind or downwind monitoring. All action levels will be for the work zone itself. A portable hand-held photoionization detector ("PID") will be used to measure total VOC concentrations and capable of integrating (averaging) over periods of 15 minutes or less. The audible alarm on the PID will be set at 5 parts per million ("ppm"). Monitoring equipment will be MiniRAE 2000 portable VOC monitors or similar equipment. All VOC monitoring will be performed using a PID calibrated at least once per day prior to work activities and recalibrated as needed thereafter.

The following summarizes VOC action levels and the appropriate responses:

- If the ambient air concentration of total organic vapors in the work zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels in the work zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps are performed, work activities can resume, provided the total organic vapor level is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown, the source of vapors identified, and corrective measures taken to abate emissions, as described below in Section 2.2.1.

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report, as shown in Appendix A, will be completed.

2.2.1 Potential Corrective Measures and VOC Suppression Techniques

If the 15-minute integrated VOC level in the work zone persists at a concentration that exceeds 5 ppm but less than 25 ppm during remediation activities, then vapor suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive organic vapors:

- limiting the excavation size;
- backfilling the excavation;
- spraying water onto the excavation faces and equipment;
- covering soil stockpiles with 6-mil plastic sheeting;
- hauling waste materials in properly tarped containers; and/or
- applying vapor suppressant foam.

All air monitoring readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

APPENDIX A

Action Limit Report

ACTION LIMIT REPORT

Project Location: _____

Date: _____ Time: _____

Name: _____

Contaminant: _____ VOC: _____

Wind Speed: _____ Wind Direction: _____

Temperature: _____ Barometric Pressure: _____

DOWNWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

UPWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

BACKGROUND CORRECTED LEVELS

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

ACTIONS TAKEN

APPENDIX B

Exhibit "E" to the
Voluntary Cleanup Agreement

Exhibit "E"

DEED RESTRICTION

Bernard Bernstein shall prohibit the Site from ever being used for purposes other than for the Contemplated Use without the express written waiver of such prohibition by the Department, or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department;

Bernard Bernstein shall prohibit the use of the groundwater underlying the Site without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Department, or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department;

Bernard Bernstein shall require Volunteer and Volunteer's successors and assigns to continue in full force and effect any institutional and engineering controls the Department requires Volunteer to put into place and maintain; and

Bernard Bernstein shall provide that Volunteer, on behalf of itself and its successors and assigns, hereby consents to the enforcement by the Department, or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department, of the prohibitions and restrictions that this Paragraph X requires to be recorded, and hereby covenants not to contest such enforcement.